MITOCW | 5. Descriptive and Functional Theory

JULIAN BEINART: You'll recall the last class was a third of conceptual models, this one dealing with the organic shape of nature and its replication in patterning of cities. We focused on a number of examples, one of which was the work of Patrick Geddes. The second one was the work of Ebenezer Howard and the garden city movement. The third was the work of Clarence Stein in the United States.

And then I did a short run through of a piece that I wrote last year for a conference in Athens on nature and the city, in which I argued that there was the most dynamic thing about cities. It is our human capacity to learn and to adapt to change. And I try to show that in the life of 70 years of the Tennessee Valley Authority, the capacity to change the perspective about what nature is.

Nature is no static phenomenon. It's a learning of patterns as previously identified in organic systems-- selectively. So it requires the human brain.

And the Tennessee Valley Authority built 28 dams on the concept that dams, that water power, was more hygienic and would be sufficient for creating a new industrial zone in the eight states of the Tennessee Valley. 65% of the power now is not generated by water. The prediction of the economic growth in this region was very low. Also, the capacity of the water to produce enough energy was low.

So what happened? Coal became the substitute. Coal led to strip mining, which is as anti-natural phenomenon as you can imagine. The largest environmental disaster in the United States happened in the coal spill from one of the coal-generating plants, and so on, and so on.

And we went through an argument which suggests that nature is still a phenomenon which is understood through the process of the human brain. There's no absolute correctness of nature. Biomorphism is a foolish project by architects who should understand a much broader interpretation of history and culture than to select items from array of natural forms. It's purely a selection.

Yes, maybe-- we have no measurement that people are more satisfied in a forest than on Fifth Avenue in New York. We assume that to be true. I suppose we could if we got honest people in a questionnaire. But Marx was right, that the establishment of the first settlement set up a duality between country and city, which is going to take a lot of time to resolve. And it's still problematic.

What I've given you today are some functional descriptive theories borrowed mainly from the social sciences. I will go through each of them with an example, and discuss what the theory is, and what it proposes, what its weaknesses are. This used to be a whole subject for a whole semester in city planning education. It's hardly dealt with now.

Part of these are classical series, which no longer are interesting to anybody. The second page-- the first page deals with the application of one of these theories-- Hoyt's to Atlanta. You can see the sector theory in Atlanta, indicating the location of high-income white housing as opposed to low-income housing, following a model purported by Homer Hoyt in 1935. The next page deals with examination of two figures in Great Britain, who lived more or less at the same time-- John Ruskin, the theorist of painting, and Friedrich Engels, who we will discuss more fully in two weeks, in a week's time, one of the origins of the modern *Communist Manifesto.* And in 1845, at the age of 25, he wrote one of the greatest books on urbanism ever written, *The Condition of the Working Class in England,* which we'll discuss when we talk about the origins of the industrial city.

The next page is from a diagram by Mel Weber in a book called*Urban Place and Non-Place Urban Realm.* This was a set of studies, which is published in this book, [INAUDIBLE], and in another book called *Cities and Space,* which deal with the advent of the interpretation of different systems of communication interacting in one place. This is an oppositional position to the conventional economic models, or even physical models, of interaction, and an old model by a book called *A Communications Theory of Urban Growth* looking at the measurement of intersections in complementary functions in spatial form.

And the last-- this is the next page-- he's from economic geography and represents population potential diagrams. And then next, we will finish with a very recent piece from *The New York Times* in which a physicist solves the city. This is hopefully what we will finish with. The question is, does it really make any sense at all? But we'll look at the work of these people dealing with models of complex theory at the moment.

The first-- let's go through this very quickly. The first-- by the way, these breakdowns were created in this class with Kevin Lynch and follows them, to some extent. Cities are seen as unique historical processes. Each city is a unique cumulative historical process.

A city can only be explained by telling a story. You cannot generalize very much about cities. What you can generalize about is the way of reading a city, the idea you have to learn the standard way of looking at them.

So, for instance, Rasmussen says two chief types are distinguishable among large cities-- the concentrated and the scattered. The former is the more common on the continent. It's clearly represented by the big government seats of Paris, and Vienna, and so on. The second type is represented by the English town, which now, to many of us, seems ideal.

The question of what is unique and what is generalized is different in some of these propositions, even within this proposition of the unique historic process. You have a book, like Allan Jacobs' book on streets, which, by the way, doesn't include the Nevsky Prospect, which is one of the great streets in the world. It's only streets that Allen Jacobs has visited. In science, I don't know if you can do experimentation on the basis of only what you have visited, but it's OK. We are handicapped.

But the cities, the streets, that he identities, each is unique. It gives measurements of its width. It gives dimensions of the density around the street. Whereas, Bill Hillier's proposition, which I'll discuss next Tuesday amongst others, *Space Syntax,* looks at streets merely as linkages in a topological environment in which, if you understand the geometry of flows, you can really make generalizations about crime, about social behavior, and so on. So there's often this tension between what is conservative unique to be reproduced and what is generalizable from that phenomenon.

I was on a review last January at Columbia for a project that students did in Palestine, in a small town in Palestine, sponsored by RIFAC, an NGO which is trying to establish Palestinian space. And this was a project for a small town which had had no economic base, but the students were privileged to study the town and come up with suggestions for a new economic base. All the students took the form of the city, that is, the architecture-- and even although it was only partially still in use-- as the basis for its reconstruction. There was something about its history, its presence, which needed to be adapted.

So if some student, excuse me, proposed to start a herbal drug industry, they did it in an adapted shelter already there. If somebody wanted to start a new business in vinegar production in Palestine, they took an old building, and if it was not large enough, they added a small fraction. One student came along and said the biggest problem in this town is garbage collection. Garbage is not properly collected, and decays, and causes a very unhealthy feeling in the town.

I'm proposing a new garbage collection center on the outskirts of the town. And he designed a mechanical instrument which collected garbage effectively. Everybody attacked the student who did this project.

The historical sense of conservation and conservative appropriation was so overwhelming that the student who proposed that a city may be a place in which people can learn, and can grow, and change-- they do anyway-- there wasn't much debate about the student's proposition. I kept quiet. I should have said something.

But it was in New York, and I felt like a provincial from Boston. So I had nothing to say. But it was a very good example of the postulation that the uniqueness of the historical process can withstand notions of change and growth.

The fascination with the concept of learning from-- of being instructed by what you see has suggested the word "reading." Reading is used in a number of cases. It's used by the architect Giancarlo De Carlo in the ILAUD schools in Italy. And so I took two examples by two great men.

John Ruskin says, number one, the vocation is seeing. He talks about growing up in a small village in England, and there was nothing to do. So he looked through the windows to the house next door and started learning how to pattern the brickwork. Now, this is something that I suppose not everybody should do. I think we have more intelligent things to do. But he talks about seeing as a constructive phenomenon, as an intellectual activity, which can be learned. It's not automatic. From a visual to the social-political, he's a professor of poetry at Oxford University, one of the most important chairs in British academia, and slowly turns his attention to the fact that there's a distinction in Britain between poverty and wealth.

His last books, *Fors Clavigera,* is subtitled, *Lessons to the Working Men of England.* He takes students on Sunday morning to work and building camps outside Oxford. He sees that reading is a combination of aesthetic and moral values. He says you have to externalize the consequences of your experience. Therefore, he writes these books and has something to say about reading and memory-- how memory is an important part of the selective part of what you understand.

Friedrich Engels comes to Manchester as a teenager. He's amazed at his contact with reality. First of all, you have to understand that it's important to observe reality.

Reality, in his case, was the most degraded conditions of housing and sewage that the world had probably ever seen. He says, you do it with your body-- with eyes, ears, nose, and feet. Number three, you do it through the eyes of others.

He had a girlfriend who was an illiterate Irish worker. He walked through the town with her and would ask her questions. I don't understand why the window's always closed. And she would say, the windows are closed, because the smell is too whatever.

And then you communicate what you've read, and you go even further. In his case, Manchester was not a unique city for him. He was reading a phenomenon which had universal implications.

It's interesting that under Marx and Engels, and as late as 1917, cities were not considered as significant in the Marxist dialogue. They were larger issues at hand. You had to change the structure of society, and as a byproduct, cities would change automatically. That doesn't work that way, but so was the doctrine of early Soviet Marxism.

And Engels himself changed. There's a wonderful book called *Marx's General* recently published by an English writer, which discusses Engel's history in relation to Hegel. Engels was in the army in Berlin doing nothing. So he attended a class in religious philosophy taught at the university.

At that time, religion was a fundamental component of the study of philosophy. In his class was Kierkegaard, Bakunin, the Russian anarchist. I forget the names of the others-- people who were there at the same time questioning whether-- Hegel's work had just been started to be published. And Engels, again, started adapting the purest Marxist doctrines to the reality of the situations he was facing in different parts of Europe as he traveled.

The notion of historians who claim the uniqueness of cities is widespread. Writing about Venice, Mary McCarthy says, there's nothing more to be said about Venice, and quotes Napoleon, Raskin, Shelly, Proust all saying the same things. And says, I envy your writing about Venice, says the newcomer. I pity you, says the old hand. There's something a little boring about saying the same things about a city.

Walter Benjamin is a much more lively character, the German philosopher who died in 1940, but wrote essays on cities. His essay on Naples is particularly interesting. Nevertheless, no city can fade in the few hours of Sunday rest more rapidly than Naples. Here's a theory of the speed at which the city changes its form from working to rest. I don't know of any other person who's ever observed the phenomenon of the speed that cities change from one form to another.

He says, the well-known list of the seven deadly sins located pride in Genoa, avarice in Florence, voluptuousness in Venice, anger in Bologna, greed in Milan, envy in Rome, and indolence in Naples. He then goes on to talk about what indolence means, and porosity of buildings, and builds an incredible central structure of this place. What you do with it is not important. It's that a city is something as particular as the gestures that people make with their hands. He claims that the gestures that people make with their hands, with their nose, with their eyes, with their breasts in Naples is unique.

AUDIENCE: So?

JULIAN BEINART: So the extraordinary thing about Walter Benjamin is this tension between this attitude of finding the deep structural explanation of cities and being a Marxist himself. As a Marxist, like Engels, he would only see Naples as a generalized phenomenon of human experience. He would look for where poor people live, and where the forces of production were, and so on. Instead, he's attracted by this uniqueness phenomenon.

Everything is unique. He writes about Paris in similar ways. Muchly is interesting in Walter Benjamin, over whom I'm a big fan. So I shouldn't criticize him too much.

Here's the architectural critic, Norberg-Schulz, the Norwegian critic, who has made a-- who wrote a book called *Genius Loci,* which suggests, again, that every town has a genius-- not every town. He only selects a couple, and then tries to explain what the genius is. So in Prague, we read the following.

"The fascination of Prague resides, first of all, in a strong sense of mystery." Big deal, you know? You have the feeling it is possible to penetrate ever deeper into things. "Streetscapes, courtyards, have an endless inside."

Now, that is maybe a profound observation of Prague. But as a theory, it is terribly little. It's very much-- in Khartoum-- he says, those who visit Khartoum are immediately struck by strong quality of place. Well, am I not struck by a strong quality of place if I enter Léon? Or is there a measurement of the amount of quality that is in Khartoum as opposed to Léon?

There is no attempt to generalize about cities whatsoever. If science is about generalization, this is not anywhere near scientific. It's maybe what architects do in reading or artists do, which raises a very big unresolved conflict in urbanism between if it is a function of art or a function of science.

Theories are especially seen as functions, as estimates, of knowledge in science and in social science. We have not resolved-- to propose, as we end up with this piece by the physicists, on what is important to resolve in urbanism, it may be that the distinction is between learning about cities through art history. Because if you look at Prague, you think of looking at Cézanne. And although Rudolf Arnheim, the gestalt psychologist, says, that if you look at Cézanne, if you'd follow the following path with your eyes from red to yellow and back to green, and these forms all fit into a scientific explanation of what you see, that's bullshit.

We accept certain truths through art. The patterning of music is studied and available for your understanding, but it is an intuitive experiential phenomenon. Much of these explanations are of that order. They don't attempt to compare the amount of mystery in Rome versus the amount of mystery in Khartoum or in Prague.

Let's go on very quickly. We've got half an hour. There's a lot of reading available about each of these sectors.

So I will propose that, if you're interested in any of these bodies of work, either contact me, and I'll give you more reading. That's if you need to do more reading. There's enough in this class already.

The next group of work is number two, ecology of people. The idea that people, as a group, behave in ways which pattern a city is most likely to be associated, in the first instance, with the work of the German sociologists from 1900 to 1950. I'll just briefly mention them and talk a little bit about what the fundamental thinking about the nature of cities was.

Max Weber in 1905-- the three are Max Weber, Georg Simmel, S-I-M-M-E-L, and Oswald Spengler. For them, cities were relatively new. You must remember that cities only grew at about 1% per annum in Europe until 1930, when parts of England grew ballistically at about 10%. But it involved a change in character.

For Weber, a city is essentially a human settlement, which could be called cosmopolitan. It contains a variety of life styles and different sorts of individuals which have to coexist. He argues that the best way for them coexisting is to establish ideal typical conditions in which each state of urban life most neatly fulfills the social capacities inherent in any of the one groups.

So for him, an ideal city would be the creation of a phenomenon, which has a large amount of distinction in it, and the maintenance of these social structures, competing social structures, the capacity to understand when they change and when they don't. He believes in the kind of city that he was examining in Germany at the time. Georg Simmel noticed another phenomenon of the emerging city form. And that is that it put pressure on the individual existence.

The access of psychic stimulation in a large city would cause withdrawal. This is a strange concept. It maybe associates itself with people like Richard Sennett, who's spoken about the fall of public man in similar ways.

That if in Simmel's case it was the withdrawal of people from the excessive stimulation of the city, in Richard Sennett's case, it's the change in the capacity of people from maintaining a state of publicness to a preference for a state of privacy. I disagree with Sennett to some extent about that observation. As I'll deal with in a subsequent class, the notion of privacy was foreign to people until the middle of the Middle Ages. But Simmel talks of this. "Whenever large numbers of people live together, there's a selfhood, a human identity, which tries to project itself in the process.

Just as an example of this phenomenon, if you would wish to withdraw in Manhattan from the intense energy that the city has produced, why would you have glass on the windows of your apartment? There's been some study of the amount of glass and residential accommodation, even to the extent that-- what is the file, old film, where this man is in his apartment and he's hurt his leg so he can't move?

AUDIENCE: *Rear Window.*

JULIAN BEINART: *Rear Window,* yes. Who was the actor?

AUDIENCE: Jimmy Stewart.

JULIAN BEINART: Jimmy Stewart, yeah. Sorry, my memory is falling apart. The phenomenon that you can use glass, as glass gives you both the option of withdrawing and being public. It's an extraordinary idea.

That if you really-- if Simmel were absolutely correct, we would all live in [INAUDIBLE], or in gardens, or anything establishing ourselves outside of the turmoil of urbanism. The glass apartment block in Manhattan, allowing people to see you when you're ready to be seen, but mostly available, is a curious phenomenon. Simmel might have had something to say about it.

Oswald Spengler had a typical negative view of the future of the emerging large city. He said, very popularly understood at the time, that there was something wrong, that it needed to be curtailed in size, that it's increasing heterogeneity was a phenomenon which was dangerous. He believed that cities would be destroyed. And I don't know what would replace them.

But he had this similar idea to others in England, that London would be dispersed and into smaller communities, largely in the rural areas of England. A complete nonsense of an idea, but one which-- none of these people attempted to understand the sociology of an actual city. They were generalists.

I'm reminded a little in reading of this of a book, which was recently published by Edward Glaser at Harvard, called *The*--

AUDIENCE: *Triumph of the City?*

JULIAN BEINART: --Triumph *of the City,* yes. There isn't really time to discuss this book at length. But at some time in this class, I would like to. So ask me a question about it when we have more time.

Its analysis is very much in the old school manner. But if Spengler proposes that cities will disappear because they are too crude, and they've deviated from decent human principles, Glaser sees the future of interaction in the modern city as the essence of its being. He proposes that a good city would intensify into action, because it's economically important, and so on, and so on, and so on.

He's not an architect. So his penchant for tall buildings, residential buildings, are indiscriminate of how they are designed, and how they are modulated, and so on. It reminds me of what's happening in China, amongst other places.

The Chicago school were a bunch of sociologists who took a look at the American city for the first time analytically. The concentric model of Park, Burgess, and McKenzie postulated a city, which is much like a plant phenomenon, that it increased and changed as it expanded outwards. That the city consisted of rings, annular rings, of social classes in which the dynamic was that you would move from the center to the outwards. And the inner ring is the center, the central business district.

Immediately surrounding it is something called the zone in transition. Beyond that is the zone of workingmen's houses. Beyond that is the zone of better residences. Beyond that is the commuter zone.

The zone of transition, that immediate zone around the central business area, is of interest. What distinguishes the American city from the European Union city in the grossest sense is the American city is city of immigration. The European city is quite the opposite.

It's only been open to immigration recently, and it's struggling like hell to deal with it. America's has gone through a couple of years, if not forever, dealing with the problem of immigration. And the zone of transition in the American city was that undetermined zone, before the settled residential population took place, a zone in transition.

The obvious phenomenon was that there's a zone which had a more rapid turnover than any other zone in the city. And this has actually been the zone which is been a zone of immigration, a zone of building of bypasses past the central business area. In fact, if anything, it's a better flex zone around the center of a city than the park system of Adelaide, which the organic model is so enthused about.

There was a gentleman called Homer Hoyt, who during the Depression years in Washington did nothing else, without a computer, calculated rent payments in cities in the United States, particularly in Chicago. He'd written a book about Chicago, from which he developed an alternative model to the concentric model. That is, he claims that the city is really patterned on the basis of sectors. Sectors allow people to move towards higher income areas, towards open space, towards mountains, towards higher natural phenomenon. And therefore, you get a division of people, rather than occupying space concentrically, occupying space through wedges.

Now, if you look at the diagram of Atlanta, you'll see some justice for his phenomenon. It applies equally well to Johannesburg. And when I do a case study with you of Johannesburg, you will see how the sector theory worked very well up to a certain point in the construction, of the organization, of the city. In the case of Atlanta, you have as I've said before, the phenomenon here based on rent payments, justifying the Hoyt model.

The Chicago school took place in the great city of Chicago. Chicago has been called the Shock City because of its rapid emergence. Chicago didn't exist in 1830, and in 1893, at the time of the Chicago World's Fair, 125th of all the world's railroads passed Chicago. It's the most rapidly-- and by virtue of its rapid growth, which wasn't accompanied by government, or good government, you have a phenomenon, which I'll look into more carefully when we discuss the case of Chicago.

Chicago is the most phenomenal 19th century city of all. And it's interesting that Chicago is the place where the first academic study of the social grouping of cities should take place. A lot of things happened for the first time in Chicago.

Economics has paid a serious but very scant interest in location. As Paul Krugman points out, the new textbook by Joseph Stiglitz at Harvard, which is 1,000 pages in length, has the word "city" mentioned once and the word "location" mentioned once. If you want to read about it, read Krugman's views on why economics has not included location as a serious input.

Read the pieces that I've suggested you read. There are two pieces by Krugman explaining why modern economics after Marshall managed very well on optimization theories without including the cost of transportation or the cost and benefits of location. He claims there's been a weakness in economic geography, which has tried to measure up to the purity of economics, of modern economics, and gives some suggestions for maybe a new post-real estate study of location.

The classic allocation models are still, number one, at the regional level. The work of von Thunen, the German agronomist, who argued that the cost of transportation was a phenomenon in allocating land use. He claims that, as I've said before, around a center, the spatial distribution of crops occurs according to the yield per unit area around a central town. You end up with dairy in the center, orchards in the next ring, grain in the next ring, cattle in the next ring, and forestry furthest from the center. This is not only a function of land values, but a function of the cost of transporting goods to the center.

Southern Germany, where von Thunen, and Christaller, and people like that, economic geographers' work was essentially flat. And with population growth occurring at a very low rate, the notion of a single-centered city or a distributed pattern of cities at regular intervals was appropriate. Christaller based his economic geography on the idea that they were central places, and you can see this phenomenon in Northern Italy today.

If you move eastward from Milan, 30 miles from Milan is Brescia. 30 miles from Brescia is Verona. Vicenza is 30 miles from Verona.

Pádova is 30 miles, and Venice at the end of this horizontal east-west axis. If you go from Milano to Bologna, you have 30 miles to Pavia, then 30 miles to Parma, 30 miles to Reggio, 30 miles to Moderna, and 30 miles to Bologna. On the axis from Bologna in the big triangle to Venice, [INAUDIBLE] Ferrara, which is about 30 miles from Bologna, and then historical land patterns didn't allow this phenomenon to take place.

There was a big exhibition in Italy entitled, "The Culture of 999 Cities." What is interesting about Christaller's interpretation for contemporary times is that a place like Moderna produces the headquarters of Lamborghini, Ferrari, and Maserati and still is a relatively small population center. If you go to Cortona, near Arezzo, it has a bunch of things. Almost every small town has a center and a condition of uniqueness.

The genius of the Italian landscape is in not developing-- well, so they argue. They haven't developed large cities. Milano is not a village, but the Italians are free to interpret things very freely.

But the genius of being able to be small, and yet to be unique, and to-- I was asked to come to Ferrara once, because they started a new school of architecture run by a friend of mine. And the city was going to give them a building, and they wanted this small group of people to choose the building. They took us to a building, which they had given to the man who developed the first electronic system for the movies, and it made a film which was very popular at the time, possible prior to all of this computer stuff.

There was a sense in this town that there was an appreciation of its capacity to be located locally. You bought food from the shop on the corner, but yet it had an international aspiration. And put together, all of these places constituted the Italian urban culture.

It's a strange phenomenon, but it's the phenomenon which is worth noticing. And it's a phenomenon which organizes the city and the country in a different way than the very large city and the very large spatial hinterland. It's worth talking about as we develop this class a bit further, but it emanates from Christaller's work-- C-H-R-I-S-T-A-L-L-E-R.

The third application of the classical economic model is in the distribution of activities in the center, in the central city itself. Here you will have the phenomenon, which seems very crude still at the moment, that they are two variables. The one is the amount of rent, the money you want to pay in rent at one access, and another axis which says the distance that you can be from the center. The argument being, that in the center, you pay higher rates, and the further out you go, the lower rent you pay.

But you have to pay the increased transportation costs. So that balance will produce suburban and then exurban locations, depending on the improvement of the transportation system outwards. That you'll get movements of people as they classically make more income from the center outwards.

And this is the working class people in this graph come in the former curve in the center, where they balance minimal costs of transportation and public transportation with low, medium rents, and so on, and so on. [INAUDIBLE] is here at MIT and the father of regional science. He's one of the formulators of this theory. Alonso at Harvard did versions of it-- Wingo, [INAUDIBLE] and others.

Let me just say a few words about the others in this list. There have been attempts to modulate the former cities by analogies to physics, population potential being the-- let me get this correct. I often make a mistake with-- well, forget about it. We haven't got time to go into the great difference between the population potential moral, gravity models, communications, networks, and topology. I should add to that more current work in fractal and chaos theory, which if you want to read about fractals, read [INAUDIBLE].

But I estimate these as having less of a life in determining current practice in urbanism than any of the others. They're somewhat academic. Gravity models, Forester's urban systems, all of these form an attempt to use notions of proximity, not notions of income, to locate shopping centers, to make modifications to the American city.

The question of decisions, linked decisions, again, here we have to look at the work of people like Forester, who claims that-- we'll see the same phenomenon in the work of John [INAUDIBLE] on Tuesday. John [INAUDIBLE] claim is that the built world is really the outcome of agreements that are made between different people. There is no city but the one that rests on made agreements, and tries to determine from made agreements what could be the form of a city which takes that into account.

Jay Forester argues that social systems are currently complex, and single answers are not predictable or should not be expected. Urban systems are based on information about the important decisions that largely businessmen make in the American city. He hasn't asked anybody or studied data of any significance.

He comes to simplistic resolutions, that the more the economy grows, the more poor people you will have, and things of this kind. And I'm not doing him justice in one sentence. Then the arena of conflict, which is really quite an interesting phenomenon.

Much of the models that I've gone through have assumed that the city is composed of benign people making benign agreements amongst each other. Park and Burgess's model of concentric circles means that it all, like a plant, takes place without the plant having any items of conflict or conflict as a phenomenon. Whereas, in fact, for many centuries, the resolution of conflicts through the building of walls was a fundamental aspect of city form. [INAUDIBLE], at the end of the 17th century, or the beginning of the 18th century, could design a town which could not be penetrated. So his reputation was-- Blondell taught fortification to architecture students at the academy in Paris.

The people who have taken up conflict really exist on the left. There's David Gordon, who explains American suburbia by the movement of bosses to get away from workers in labor strife. You get Manual Castells in his pre-communication theory mode, who is a young Spanish Marxist who wrote something called *The Wild City,* in which he claims that suburbanisation is the function of surplus commodities rather than of any other form of economy. David Harvey, arguing that it's very difficult to produce social equity under capitalism, because there will always be obstacles in the way of maximizing return on capital.

Lefebvre, the French sociologist who ran a journal called [FRENCH]-- I was the editor of [NON-ENGLISH], *Space and Society,* which was-- I was part editor, following Lefebvre's example. All of these are looking at the way in which conflict can be assumed and resolved as part of the real existence of a city. Giancarlo De Carlo, Italian architect, used to argue that one of the functions of-- one of the ways of displaying conflict was to allow architecture to build in its appropriate fashion, but to depict the elements of conflict that are available, and to heighten the sense of conflicts in a city, but also to make it possible, in a kind of anarchic sense, for that city's resolutions to be made within a framework of understood conflict-- resolvable conflict, not revolution. So these attempts at plans sometimes manifest this, or at least.

If you look at the workers' housing in Terni, for instance, you can see elements of this proposition, but it's very vague, and very generalized, and not really a powerful theory. The Marxists have not produced cities which have externalized the conflict notions which they examined in the [INAUDIBLE]. Their cities are much like any city in the world. And Chinese Marxism is certainly not producing very much from which we can learn about new city growth. So this particular theory is waiting too.

Most of these theories-- let me just end off at once with this piece I gave you on the physics of--

AUDIENCE: [INAUDIBLE]?

JULIAN BEINART: Hmm?

AUDIENCE: The work of [INAUDIBLE]?

JULIAN BEINART: Yes. Do you know his work?

AUDIENCE: Yeah.

JULIAN BEINART: What do you think of it?

AUDIENCE: I think it brings in an interesting perspective of all these findings on the efficiency of [INAUDIBLE] innovation of investment versus how the population grows at the same time the per capita wealth it generates. But it seems to be a bit reductionist to me.

JULIAN BEINART: You know, it starts--

AUDIENCE: [INAUDIBLE] universal model.

JULIAN BEINART: Yeah, it starts separating out what optimizes the functioning of a city in terms of transportation, land use, crime, and so on, which are important components to understand. But he doesn't accept the city as an environment which has speciality, or experience, or any of the things that art history-- I'm beginning to think more and more, that in order to understand urbanism, you need to study art history and perhaps forget about all of this stuff. But we all know that every city is unique. That's all we talk about when we talk about cities.

But focusing on those differences misses the point. Sure, there are differences. But different from what? We found the what.

There's an arrogance about the security of physics as applied to complex phenomena, such as a city. It may be that this is a new generation of thinking. I mean, they're doing it at Oxford, and Santa Fe, and there are more and more groups of complex theorists emerging.

I have my doubts. I'll be too old to see any of this anyway. So I leave it to you. On Tuesday, we will look at, for the last time, in Part 1 of the subject, at four or five theories of architects, contemporary architects, who are recently deceased architects, who've made attempts, such as *Space Syntax,* so on, and so on. And then start from scratch with the Industrial Revolution and see what we can learn by looking carefully at phenomena.